WHAT IS CLAIMED IS:

1. An apparatus for selecting one of first and second transmit antenna diversity schemes by a user equipment (UE) in a system including a Node B transmitter which includes at least two antennas and uses the first transmit antenna diversity scheme for transmitting space time transmit diversity (STTD)-encoded signals via the antennas and the second transmit antenna diversity scheme for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from the UE, the apparatus comprising:

a channel estimator for receiving a first channel signal from the Node B transmitter, and estimating a channel response from the received first channel signal;

a determiner for estimating a variation speed of the first channel based on the estimated channel response, and selecting one of the first and second transmit antenna diversity schemes according to the estimated variation speed of the first channel; and

an information generator for generating information indicating the selected transmit antenna diversity scheme.

2. The apparatus of claim 1, wherein the determiner calculates an autocorrelation value of the channel response, and estimates a speed value mapped to the autocorrelation value as a variation speed of the first channel.

3. The apparatus of claim 1, wherein the information indicating the selected transmit antenna diversity scheme includes a field indicating the selected transmit antenna diversity scheme and a field indicating a weight applied when the selected transmit antenna diversity scheme is used.

4. The apparatus of claim 1, wherein the first channel is a pilot channel.

5. An apparatus for selecting, by a Node B, one of first and second transmit antenna diversity schemes and transmitting a channel signal according to the selected transmit antenna diversity scheme in a system including the Node B which

includes at least two antennas and uses the first transmit antenna diversity scheme for transmitting space time transmit diversity (STTD)-encoded signals via the antennas and the second transmit antenna diversity scheme for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from a user equipment (UE), the apparatus comprising:

an information extractor for receiving a first channel signal from the UE, and detecting, from the received first channel signal, information indicating one of the first and second transmit antenna diversity schemes, selected by the UE;

a controller for determining a transmit antenna diversity scheme to be applied to channel signals to be transmitted by the Node B, based on the detected information; and

a transmitter for encoding the channel signals according to the determined transmit antenna diversity scheme and transmitting the encoded channel signals.

6. The apparatus of claim 5, wherein the information indicating the transmit antenna diversity scheme includes a field indicating the selected transmit antenna diversity scheme and a field indicating a weight applied when the selected transmit antenna diversity scheme is used.

7. The apparatus of claim 6, wherein the transmitter comprises:

a converter for encoding the channel signals according to the determined transmit antenna diversity scheme;

a multiplier for multiplying the encoded channel signals by a weight to be applied to the transmit antenna diversity scheme; and

a summer for summing up the weighted encoded channel signals and a pilot signal, and transmitting the summation result.

8. The apparatus of claim 5, wherein the first channel is a dedicated physical control channel.

9. A method for selecting one of first and second transmit antenna

diversity schemes by a user equipment (UE) in a system including a Node B transmitter which includes at least two antennas and uses the first transmit antenna diversity scheme for transmitting space time transmit diversity (STTD)-encoded signals via the antennas and the second transmit antenna diversity scheme for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from the UE, the method comprising the steps of:

receiving a first channel signal from the Node B transmitter;

estimating a channel response from the received first channel signal;

estimating a variation speed of the first channel based on the estimated channel response;

selecting one of the first and second transmit antenna diversity schemes according to the estimated variation speed of the first channel; and

transmitting information indicating the selected transmit antenna diversity scheme to the Node B transmitter.

10. The method of claim 9, wherein the step of estimating a variation speed of the first channel comprises the step of calculating an autocorrelation value of the channel response, and estimating a speed value mapped to the autocorrelation value as a variation speed of the first channel.

11. The method of claim 9, wherein the information indicating the selected transmit antenna diversity scheme includes a field indicating the selected transmit antenna diversity scheme and a field indicating a weight applied when the selected transmit antenna diversity scheme is used.

12. The method of claim 9, wherein the first channel is a pilot channel.

13. A method for selecting, by a Node B, one of first and second transmit antenna diversity schemes and transmitting a channel signal according to the selected transmit antenna diversity scheme in a system including the Node B which includes at least two antennas and uses the first transmit antenna diversity scheme for transmitting

space time transmit diversity (STTD)-encoded signals via the antennas and the second transmit antenna diversity scheme for controlling a phase of signals transmitted from the antennas in response to feedback information including relative phase difference information of the antennas from a user equipment (UE), the method comprising the steps of:

receiving a first channel signal from the UE;

detecting, from the received first channel signal, information indicating one of the first and second transmit antenna diversity schemes, selected by the UE;

determining a transmit antenna diversity scheme to be applied to channel signals to be transmitted by the Node B, based on the detected information; and

encoding the channel signals according to the determined transmit antenna diversity scheme and transmitting the encoded channel signals.

14. The method of claim 13, wherein the information indicating the transmit antenna diversity scheme includes a field indicating the selected transmit antenna diversity scheme and a field indicating a weight applied when the selected transmit antenna diversity scheme is used.

15. The method of claim 14, wherein the step of encoding the channel signals according to the determined transmit antenna diversity scheme and transmitting the encoded channel signals comprises the steps of:

encoding the channel signals according to the determined transmit antenna diversity scheme;

multiplying the encoded channel signals by a weight to be applied to the transmit antenna diversity scheme; and

summing up the weighted encoded channel signals and a pilot signal, and transmitting the summation result.

16. The method of claim 13, wherein the first channel is a dedicated physical control channel.